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EXAMINER

WANG, JIN CHENG

ART UNIT	PAPER NUMBER
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2672

6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,405

Applicant(s)

VAN DOAN ET AL.

Examiner

Jin-Cheng Wang

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-116 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-116 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-116 are rejected under 35 U.S.C. 102(e) as being anticipated by Politis U.S. Pat. No. 6,191,797.

3. Claim 1:

U.S. Pat. No. 6,191,797 to Politis teaches a method of creating an image, said image being formed by rendering at least a plurality of graphical objects to be composited according to a first hierarchical structure representing a compositing expression for said image (see the abstract), said first hierarchical structure including a plurality of nodes each representing at least a component of said image (see e.g., figures 3-4) or an operation for combining sub-expressions of said compositing expression (figure 4), said method comprising the steps of:

(a) Storing a second hierarchical structure for at least one node of said first hierarchical structure (i.e., a subtree of a quadtree, or quadtree q2 for the second hierarchical structure, see figures 7-8, column 15, lines 53-67), said second hierarchical structure indicating at least an unobscured region of an object (the quadtree representing the region occupied by circle 44) associated with said node;

Art Unit: 2672

(b) Partitioning a space in which said object is defined into a plurality of regions (Partitioning a space into cells. For example, the hierarchical data structures suitable for representing a region or portion of an image and such region representation is known as quadtrees in which the creation of a quadtree representing a region of an image requires the subdivision of the region into a plurality of cells, each cell being a portion of the region and each cell represented by a node of the quadtree, see the abstract, column 3, lines 44-58);

(c) Overlaying said second hierarchical structure on said object such that said object is substantially encompassed within said second hierarchical structure (the quadtree q2 is created representing the region of the image occupied by the circle, see column 15, lines 15-20);

(d) Traversing said overlayed second hierarchical structure to identify any of said plurality of regions which include at least a portion of said unobscured region (Traversing the nodes of an object's quadtree, column 15, lines 21-45, column 8, lines 33-44);

(e) Creating said image by rendering (compositing) said identified regions (column 1, lines 28-43; column 7, lines 44-54).

Claim 2:

The claim 2 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of traversing said first hierarchical structure to detect said node including said second hierarchical structure. However, Politis further discloses the claimed limitation of traversing said first hierarchical structure to detect said node including said second hierarchical structure (column 15, lines 21-45, column 8, lines 33-44).

Claim 3:

Art Unit: 2672

The claim 3 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that said second hierarchical structure is traversed for each of said plurality of regions. However, Politis further discloses the claimed limitation that said second hierarchical structure is traversed for each of said plurality of regions (column 15, lines 21-45, column 8, lines 33-44).

Claim 4:

The claim 4 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of producing a map for said plurality of regions, wherein said map at least indicates any region which includes at least a portion of said unobsured region. However, Politis further discloses the claimed limitation of producing a map for said plurality of regions (tagged for clipping at a later stage), wherein said map at least indicates any region which includes at least a portion of said unobsured region (column 15, lines 54-67).

Claim 5:

The claim 5 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that said map includes a flag for each of said regions. However, Politis further discloses the claimed limitation that said map includes a flag (a back-pointer) for each of said regions (column 20, lines 1-3).

Claim 6:

The claim 6 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of "run length encoding". However, Politis further discloses the claimed limitation of "run length encoding" (column 3, lines 44-59).

Claim 7:

Art Unit: 2672

The claim 7 encompasses the same scope of invention as that of claim 4 except additional claimed limitation that said map is traversed in a predetermined order to determine said identified regions. However, Politis further discloses the claimed limitation that said map is traversed in a predetermined order to determine said identified regions (column 15, lines 7-67).

Claim 8:

The claim 8 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of "right leaning hierarchical structure". However, Politis further discloses the claimed limitation of "right leaning hierarchical structure" (e.g., figures 4 and 5).

Claim 9:

The claim 9 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that said first hierarchical structure is a graphic object tree. However, Politis further discloses the claimed limitation that said first hierarchical structure is a graphic object tree (column 14, 29-39, column 15, lines 7-67). The examiner interprets a graphic object tree as an expression tree.

Claim 10:

The claim 10 encompasses the same scope of invention as that of claim 1 except additional claimed limitation that said first hierarchical structure is a quadtree. However, Politis further discloses the claimed limitation that said first hierarchical structure is a quadtree (column 15, lines 7-67).

Claim 11:

The claim 11 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of traversing said overlayed first hierarchical structure to detect

Art Unit: 2672

said node including said second hierarchical structure. However, Politis further discloses the claimed limitation of traversing said overlayed first hierarchical structure to detect said node including said second hierarchical structure (column 15, lines 21-45, column 8, lines 33-44).

Claim 12:

The claim 12 encompasses the same scope of invention as that of claim 11 except additional claimed limitation that said hierarchical structure is traversed for each of said plurality of regions. However, Politis further discloses the claimed limitation that said hierarchical structure is traversed for each of said plurality of regions (column 15, lines 21-45, column 8, lines 33-44).

Claims 13-19:

The claim 13, 14, 15, 16, 17, 18 and 19 encompasses the same scope of invention as that of claim 11 except additional claimed limitation that is respectively identical to claim 4, 5, 6, 7, 8, 9, 10. The claims are rejected for the same reason set forth in above.

Claims 20-25:

The claim 20, 21, 22, 23, 24, 25 encompasses the same scope of invention as that of claim 1, 2, 3, 4, 9, 10 except additional claimed limitation of "an apparatus". However, Politis further discloses the claimed limitation of "an apparatus" (see the abstract, figure 12).

Claims 26-30:

The claim 26, 27, 28, 29, 30 encompasses the same scope of invention as that of claim 11, 12, 13, 18, 19 except additional claimed limitation of "an apparatus". However, Politis further discloses the claimed limitation of "an apparatus" (see the abstract, figure 12).

Claims 31:

Art Unit: 2672

The claim 31 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of “a computer program for a computer comprising software code portions for performing a method”. However, Politis further discloses the claimed limitation of “a computer program for a computer comprising software code portions for performing a method” (column 3, lines 36-37, column 18, lines 29-31).

Claims 32:

The claim 32 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of “a computer readable medium storing a computer program”. However, Politis further discloses the claimed limitation of “a computer readable medium storing a computer program” (figure 12, column 3, lines 36-37, column 18, lines 29-31).

4. Claim 33:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

(a) Performing a first traversal of said tree (column 3, lines 44-59, column 8, lines 33-44) to determine opacity information (alpha value, see Table 1, column 3, lines 61-67, column 4, lines 1-4) for each node of said tree, wherein said opacity information represents combined

Art Unit: 2672

opacity for a node on regions associated with the node (each node having opacity information for compositing operations, column 3, lines 61-67, column 4, lines 1-63, column 15, lines 7-33); and

(b) Optimizing said expression tree by performing a second traversal (depth-first traversal, column 8, lines 33-44) of said tree to determine obsurance information for each node of said tree (column 7, lines 21-67, column 8, lines 1-44, column 10, lines 13-26) using said opacity information, wherein said obsurance information represents at least an unobscured region associated with the node (column 15, lines 53-67, column 16, lines 1-19).

Claim 34:

The claim 34 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of said opacity information being represented by a first hierarchical structure. However, Politis further discloses the claimed limitation of said opacity information being represented by a first hierarchical structure (column 10, lines 13-26).

Claim 35:

The claim 35 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of said obsurance information being represented by a second hierarchical structure. However, Politis further discloses the claimed limitation of said obsurance information being represented by a second hierarchical structure (column 7, lines 44-54, column 15, lines 53-67).

Claim 36:

The claim 36 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of identifying nodes having an associated complex graphical object.

Art Unit: 2672

However, Politis further discloses the claimed limitation of identifying nodes having an associated complex graphical object (column 15, lines 53-67). The examiner interprets a complex graphical object as a graphical object such as a bounding box comprising text.

Claim 37:

The claim 37 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of determining opacity information for each node identified. However, Politis further discloses the claimed limitation of determining opacity information for each node identified (column 7, lines 44-54, column 15, lines 53-67).

Claim 38:

The claim 38 encompasses the same scope of invention as that of claim 37 except additional claimed limitation that said first hierarchical structure is dependent on said opacity information. However, Politis further discloses the claimed limitation that said first hierarchical structure is dependent on said opacity information (Table 1, column 7, lines 44-54, column 15, lines 53-67).

Claim 39:

The claim 39 encompasses the same scope of invention as that of claim 33 except additional claimed limitation that said first traversal is a bottom-up traversal. However, Politis further discloses the claimed limitation that said first traversal is a bottom-up traversal (column 10, lines 13-26, column 20, lines 1-3, column 15, lines 53-67).

Claim 40:

The claim 40 encompasses the same scope of invention as that of claim 39 except additional claimed limitation that opacity information of a child node is at least propagated to a

Art Unit: 2672

parent node associated with said child node. However, Politis further discloses the claimed limitation that opacity information of a child node is at least propagated to a parent node associated with said child node (column 15, lines 53-67).

Claim 41:

The claim 41 encompasses the same scope of invention as that of claim 33 except additional claimed limitation that said second traversal is a top-down traversal. However, Politis further discloses the claimed limitation that said second traversal is a top-down traversal (column 8, lines 33-44).

Claim 42:

The claim 42 encompasses the same scope of invention as that of claim 41 except additional claimed limitation that obsurance information of a parent node is at least propagated to a child node associated with said parent node. However, Politis further discloses the claimed limitation that obsurance information of a parent node is at least propagated to a child node associated with said parent node (column 15, lines 7-67).

Claim 43:

The claim 43 encompasses the same scope of invention as that of claim 34 except additional claimed limitation that said first hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed.

However, Politis further discloses the claimed limitation that said first hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed (column 15, lines 7-67).

Claim 44:

The claim 44 encompasses the same scope of invention as that of claim 35 except additional claimed limitation that said second hierarchical structures for a node are constructed by combining any first hierarchical structures associated with the node. However, Politis further discloses the claimed limitation that said second hierarchical structures for a node are constructed by combining any first hierarchical structures associated with the node (column 15, lines 7-67).

Claim 45:

The claim 45 encompasses the same scope of invention as that of claim 34 except additional claimed limitation that each leaf node of said first hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node. However, Politis further discloses the claimed limitation that each leaf node of said first hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node (Table 1, column 15, lines 7-67).

Claim 46:

The claim 46 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of "right leaning tree". However, Politis further discloses the claimed limitation of "right leaning tree" (e.g., column 3, lines 44-59, figures 5 and 6).

Claim 47:

The claim 47 encompasses the same scope of invention as that of claim 34 except additional claimed limitation that each node of said first hierarchical structure comprises a pointer indicating children nodes associated with said node. However, Politis further discloses

Art Unit: 2672

the claimed limitation that each node of said first hierarchical structure comprises a pointer indicating children nodes associated with said node (column 20, lines 1-3).

Claim 48:

The claim 48 encompasses the same scope of invention as that of claim 35 except additional claimed limitation that said first and second hierarchical structures are quadrees. However, Politis further discloses the claimed limitation that said first and second hierarchical structures are quadrees (column 15, lines 7-67).

Claim 49:

The claim 49 encompasses the same scope of invention as that of claim 33 except additional claimed limitation that opacity information is represented by bounding boxes. However, Politis further discloses the claimed limitation that opacity information is represented by bounding boxes (column 15, lines 7-67).

Claim 50:

The claim 50 encompasses the same scope of invention as that of claim 33 except additional claimed limitation that obscurance information is represented by bounding boxes. However, Politis further discloses the claimed limitation that obscurance information is represented by bounding boxes (column 15, lines 7-67).

5. Claim 51:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree

Art Unit: 2672

representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

(a) Performing a first traversal of said tree (compositing operations) to construct a first hierarchical structure for each operation of said tree, wherein said first hierarchical structure represents combined opacity information for a node based on regions associated with the node (column 3, lines 40-67, column 4, lines 1-63); and

(b) Optimizing said expression tree by performing a second traversal of said tree to construct a second hierarchical structure for each node of said tree using said opacity information, wherein said second hierarchical structure represents at least an unobscured region associated with the node (column 7, lines 21-67, column 8, lines 1-44, column 15, lines 53-67).

6. Claim 51:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

(a) Performing a first traversal of said tree to identify nodes having an associated complex graphical object (partly obscured graphical objects, column 3, lines 22-67, column 4, lines 1-47);

(b) Performing a second traversal of said tree to determine opacity information for each node identified in said first traversal (column 15, lines 7-33, column 8, lines 33-44);

(c) Constructing a first hierarchical structure for each node of said tree based on said opacity information, wherein said first hierarchical structure represents combined opacity information for a node based on regions associated with the node (column 3, lines 21-67, column 4, lines 1-63, column 15, lines 7-33); and

(d) Optimizing said expression tree by performing a third traversal (at a later stage) of said tree to construct a second hierarchical structure (construct a new quadtree, column 16, lines 1-19) for each node of said tree using said opacity information (after optimization of an image composition by removing totally obscured regions from the expression tree, column 7, lines 29-43), wherein said second hierarchical structure represents at least an un-obscured region associated with the node (column 7, lines 21-67, column 8, lines 1-44, column 15, lines 53-67, column 16, lines 1-19).

Claim 53:

The claim 53 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said first traversal is a bottom-up traversal of said tree. However, Politis further discloses the claimed limitation that said first traversal is a bottom-up traversal of said tree (compositing operations, column 7, lines 21-28).

Claim 54:

The claim 54 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that each node having an associated complex graphical object is

Art Unit: 2672

tagged. However, Politis further discloses the claimed limitation that each node having an associated complex graphical object is tagged (column 7, lines 55-64, column 8, lines 7-17).

Claim 55:

The claim 55 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said second traversal is a top-down traversal of said tree. However, Politis further discloses the claimed limitation that said second traversal is a top-down traversal of said tree (removing totally obscured regions from the expression tree, column 8, lines 33-44).

Claim 56:

The claim 56 encompasses the same scope of invention as that of claim 55 except additional claimed limitation that opacity information is propagated down said tree. However, Politis further discloses the claimed limitation that opacity information is propagated down said tree (column 8, lines 33-44, column 15, lines 53-67, column 16, lines 1-19).

Claim 57:

The claim 57 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that a first hierarchical structure of a child node is at least propagated to a parent node associated with said child node. However, Politis further discloses the claimed limitation that a first hierarchical structure of a child node is at least propagated to a parent node associated with said child node (column 15, lines 7-33).

Claim 58:

The claim 58 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said third traversal is a top-down traversal. However, Politis

Art Unit: 2672

further discloses the claimed limitation that said third traversal is a top-down traversal (column 15, lines 53-67, column 16, lines 1-19).

Claim 59:

The claim 59 encompasses the same scope of invention as that of claim 58 except additional claimed limitation that a second hierarchical structure of a parent node is at least propagated to a child node associated with said parent node. However, Politis further discloses the claimed limitation that a second hierarchical structure of a parent node is at least propagated to a child node associated with said parent node (column 15, lines 7-67).

Claim 60:

The claim 60 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said first hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed. However, Politis further discloses the claimed limitation that said first hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed (compositing operations, Table 1, column 3, lines 22-67, column 4, lines 1-4).

Claim 61:

The claim 61 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said second hierarchical structures for a node are constructed by combining any first hierarchical structures associated with the node. However, Politis further discloses the claimed limitation that said second hierarchical structures for a node are constructed by combining any first hierarchical structures associated with the node (column 15, lines 7-67).

Art Unit: 2672

Claim 62:

The claim 62 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that each leaf node of said first hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node.

However, Politis further discloses the claimed limitation that each leaf node of said first hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node (Table 1, column 3, lines 22-67, column 4, lines 1-4).

Claim 63:

The claim 63 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that each node of said first hierarchical structure comprises a pointer to indicate children nodes associated with said node. However, Politis further discloses the claimed limitation that each node of said first hierarchical structure comprises a pointer to indicate children nodes associated with said node (column 20, lines 1-3).

Claim 64:

The claim 64 encompasses the same scope of invention as that of claim 52 except additional claimed limitation that said first and second hierarchical structures are quadrees. However, Politis further discloses the claimed limitation that said first and second hierarchical structures are quadrees (column 15, lines 7-67).

Claims 65-77:

The claim 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77 encompasses the same scope of invention as that of claim 33, 34, 35, 36, 37, 48, 49, 50, 51, 52, 53, 54, 55 except additional

Art Unit: 2672

claimed limitation of “an apparatus”. However, Politis further discloses the claimed limitation of “an apparatus” (see the abstract, figure 12).

Claims 78:

The claim 78 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of “a computer program for a computer comprising software code portions for performing a method”. However, Politis further discloses the claimed limitation of “a computer program for a computer comprising software code portions for performing a method” (column 3, lines 36-37, column 18, lines 29-31).

Claims 79:

The claim 79 encompasses the same scope of invention as that of claim 33 except additional claimed limitation of “a computer readable medium storing a computer program”. However, Politis further discloses the claimed limitation of “a computer readable medium storing a computer program” (figure 12, column 3, lines 36-37, column 18, lines 29-31).

7. Claim 80:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

Art Unit: 2672

(a) Performing a first traversal of said tree to determine opacity information for each node of said tree, wherein said opacity information represents combined opacity information for a node based on regions associated with the node (figures 7 and 8, column 3, lines 21-67, column 4, lines 1-4, column 15, lines 7-33); and

(b) Optimizing said expression tree by performing a second traversal of said tree to determine compositing information for at least one node of said tree, wherein said compositing information for a node is determined using opacity information associated with the node, and wherein said compositing information represents at least obscured regions, load regions and regions to be composited for an object associated with the node (column 7, lines 21-67, column 8, lines 1-44, column 15, lines 22-67, column 16, lines 1-19).

Claim 81:

The claim 81 encompasses the same scope of invention as that of claim 80 except additional claimed limitation that compositing information is represented by a first hierarchical structure. However, Politis further discloses the claimed limitation that compositing information is represented by a first hierarchical structure (Table 1, figures 7 and 8).

Claim 82:

The claim 82 encompasses the same scope of invention as that of claim 81 except additional claimed limitation of identifying nodes of said tree, for which a first hierarchical structure is required, depending on opacity information associated with the node. However, Politis further discloses the claimed limitation identifying nodes of said tree, for which a first

Art Unit: 2672

hierarchical structure is required, depending on opacity information associated with the node (column 7, lines 21-28).

Claim 83:

The claim 83 encompasses the same scope of invention as that of claim 80 except additional claimed limitation that said opacity information comprises a second hierarchical structure representing an opacity of a region associated with a node. However, Politis further discloses the claimed limitation that said opacity information comprises a second hierarchical structure representing an opacity of a region associated with a node (column 15, lines 7-67).

Claim 84:

The claim 84 encompasses the same scope of invention as that of claim 80 except additional claimed limitation that said opacity information comprises a bounding box representing an opacity of a region associated with a node. However, Politis further discloses the claimed limitation that said opacity information comprises a bounding box representing an opacity of a region associated with a node (column 15, lines 7-67).

Claim 85:

The claim 85 encompasses the same scope of invention as that of claim 81 except additional claimed limitation that said first hierarchical structure is dependent on said opacity information. However, Politis further discloses the claimed limitation that said first hierarchical structure is dependent on said opacity information (Table 1).

Claim 86:

Art Unit: 2672

The claim 86 encompasses the same scope of invention as that of claim 81 except additional claimed limitation that said first traversal is a bottom up traversal. However, Politis further discloses the claimed limitation that said first traversal is a bottom traversal (Table 1).

Claim 87:

The claim 87 encompasses the same scope of invention as that of claim 83 except additional claimed limitation that opacity information of a child node is at least propagated to a parent node associated with said child node. However, Politis further discloses the claimed limitation that opacity information of a child node is at least propagated to a parent node associated with said child node (column 15, lines 7-67).

Claim 88:

The claim 88 encompasses the same scope of invention as that of claim 87 except additional claimed limitation that opacity information of said parent node is determined by merging at least two second hierarchical structures.

However, Politis further discloses the claimed limitation that opacity information of said parent node is determined by merging at least two second hierarchical structures (column 15, lines 7-67).

Claim 89:

The claim 89 encompasses the same scope of invention as that of claim 87 except additional claimed limitation that opacity information of said parent node is determined by merging at least one second hierarchical structure and a bounding box.

Art Unit: 2672

However, Politis further discloses the claimed limitation that opacity information of said parent node is determined by merging at least one second hierarchical structure and a bounding box (column 15, lines 7-67).

Claim 90:

The claim 90 encompasses the same scope of invention as that of claim 80 except additional claimed limitation that said second traversal is a top-down traversal. However, Politis further discloses the claimed limitation that said second traversal is a top-down traversal (column 8, lines 33-44).

Claim 91:

The claim 91 encompasses the same scope of invention as that of claim 88 except additional claimed limitation that a first hierarchical structure of a parent node is at least propagated to a child node associated with said parent node. However, Politis further discloses the claimed limitation that a first hierarchical structure of a parent node is at least propagated to a child node associated with said parent node (column 8, lines 33-44).

Claim 92:

The claim 92 encompasses the same scope of invention as that of claim 83 except additional claimed limitation that said second hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed. However, Politis further discloses the claimed limitation that said second hierarchical structure is dependent on an operation associated with a node for which said first hierarchical structure is constructed (Table 1).

Claim 93:

Art Unit: 2672

The claim 93 encompasses the same scope of invention as that of claim 83 except additional claimed limitation that each leaf node of said second hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node.

However, Politis further discloses the claimed limitation that each leaf node of said second hierarchical structure is assigned a value depending on an opacity of a region associated with said leaf node (Table 1).

Claim 94:

The claim 94 encompasses the same scope of invention as that of claim 83 except additional claimed limitation that each node of said second hierarchical structure comprises a pointer to indicate children nodes associated with said node. However, Politis further discloses the claimed limitation that each node of said second hierarchical structure comprises a pointer to indicate children nodes associated with said node (column 20, lines 1-3).

Claim 95:

The claim 95 encompasses the same scope of invention as that of claim 83 except additional claimed limitation that said first and second hierarchical structures are quadrees. However, Politis further discloses the claimed limitation that said first and second hierarchical structures are quadrees (column 15, lines 7-67).

8. Claim 96:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree

Art Unit: 2672

representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

(a) Performing a first traversal of said tree to determine opacity information for each node of said tree, wherein said opacity information represents combined opacity information for a node based on regions associated with the node (column 3, lines 22-67, column 4, lines 1-4, column 15, lines 7-33); and

(b) Optimizing said expression tree by performing a second traversal of said tree to construct a first hierarchical structure for at least one node of said tree, wherein said first hierarchical structure is constructed for a node using opacity information associated with the node, and wherein said first hierarchical structure represents at least obscured regions, load regions and regions to be composited, for an object associated with the node (column 7, lines 21-67, column 8, lines 1-44, column 15, lines 53-67, column 16, lines 1-19).

9. Claim 97:

U.S. Pat. No. 6,191,797 to Politis teaches a method for optimizing an expression tree (column 8, lines 45-60), said expression tree representing a compositing expression for compositing an image and comprising a plurality of nodes, each said node of said tree representing at least a component of said image or an operation for combining sub-expressions of said compositing expression and each said node having a region of the image represented by said node (column 3, lines 44-59), the method comprising the steps of:

Art Unit: 2672

(a) Performing a first traversal of said tree to determine opacity information for each node of said tree, wherein said opacity information represents combined opacity information for a node based on regions associated with the node (column 3, lines 22-67, column 4, lines 1-4);

(b) Identifying nodes of said tree, for which a first hierarchical structure is required, depending on opacity information associated with the node (column 15, lines 7-67); and

(b) Optimizing said expression tree by performing a second traversal of said tree to determine compositing information for each node of said tree identified in said first traversal, wherein said compositing information is determined for a node using opacity information associated with the node, and wherein said compositing information represents at least obscured regions, load regions and regions to be composited for an object associated with the node (column 7, lines 21-67, column 8, lines 1-44, column 15, lines 53-67, column 16, lines 1-19).

Claims 98-99, 102:

The claim 98, 99, or 102 encompasses the same scope of invention as that of claim 97 except additional claimed limitation that is identical to claim 81, 83, or 86. The claims are rejected for the same reason set forth in claim 81, 83, or 86 respectively.

Claims 100, 101, 106:

The claim 100, 101, or 106 encompasses the same scope of invention as that of claim 98 except additional claimed limitation that is identical to claim 84, 85, or 90. The claims are rejected for the same reason set forth in claim 84, 85, or 90.

Claim 103:

Art Unit: 2672

The claim 103 encompasses the same scope of invention as that of claim 99 except additional claimed limitation that is identical to claim 87. The claims are rejected for the same reason set forth in claim 87.

Claims 104-105:

The claim 104, 105 encompasses the same scope of invention as that of claim 103 except additional claimed limitation that is identical to claim 88, 89. The claims are rejected for the same reason set forth in claim 88, 89 respectively.

Claim 107:

The claim 107 encompasses the same scope of invention as that of claim 106 except additional claimed limitation that is identical to claim 91. The claims are rejected for the same reason set forth in claim 91.

Claims 108-114:

The claim 108, 109, 110, 111, 112, 113, 114 encompasses the same scope of invention as that of claim 80, 81, 82, 83, 84, 96, 97 except additional claimed limitation of "an apparatus". However, Politis further discloses the claimed limitation of "an apparatus" (see the abstract, figure 12). The claim 108, 109, 110, 111, 112, 113, or 114 is therefore rejected for the same reason set forth in claim 80, 81, 82, 83, 84, 96 or 97 respectively.

Claims 105:

The claim 105 encompasses the same scope of invention as that of claim 97 except additional claimed limitation of "a computer program for a computer comprising software code portions for performing a method". However, Politis further discloses the claimed limitation of

Art Unit: 2672

“a computer program for a computer comprising software code portions for performing a method” (column 3, lines 36-37, column 18, lines 29-31).

Claims 106:

The claim 106 encompasses the same scope of invention as that of claim 97 except additional claimed limitation of “a computer readable medium storing a computer program”. However, Politis further discloses the claimed limitation of “a computer readable medium storing a computer program” (figure 12, column 3, lines 36-37, column 18, lines 29-31).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hanan Samet, "The Quadtree and Related Hierarchical Data Structures", Computing Surveys, Jun. 1984, vol. 16, No. 2, pp. 187-260 discloses the quadtree and hierarchical data structures.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (703) 605-1213. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6606 for regular communications and (703) 308-6606 for After Final communications.

Application/Control Number: 09/863,405

Page 28

Art Unit: 2672

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 395-3900.

jcw
May 1, 2003

A handwritten signature in black ink, appearing to read 'M. Razavi', with a long horizontal line extending to the right.

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600